4 Interface description PROFINET IO

The PROFINET interface of the MP85ADP-PN(-S) is enabled by a Hilscher gateway module plugged into the PROFIBUS interface. The description below shows the gateway configuration and, by way of example, the connection of the gateway to a PLC via the TIA portal. In a further example, we explain how you can read and write acyclic data (the workpiece name in this case).

4.1 Connection and preparation

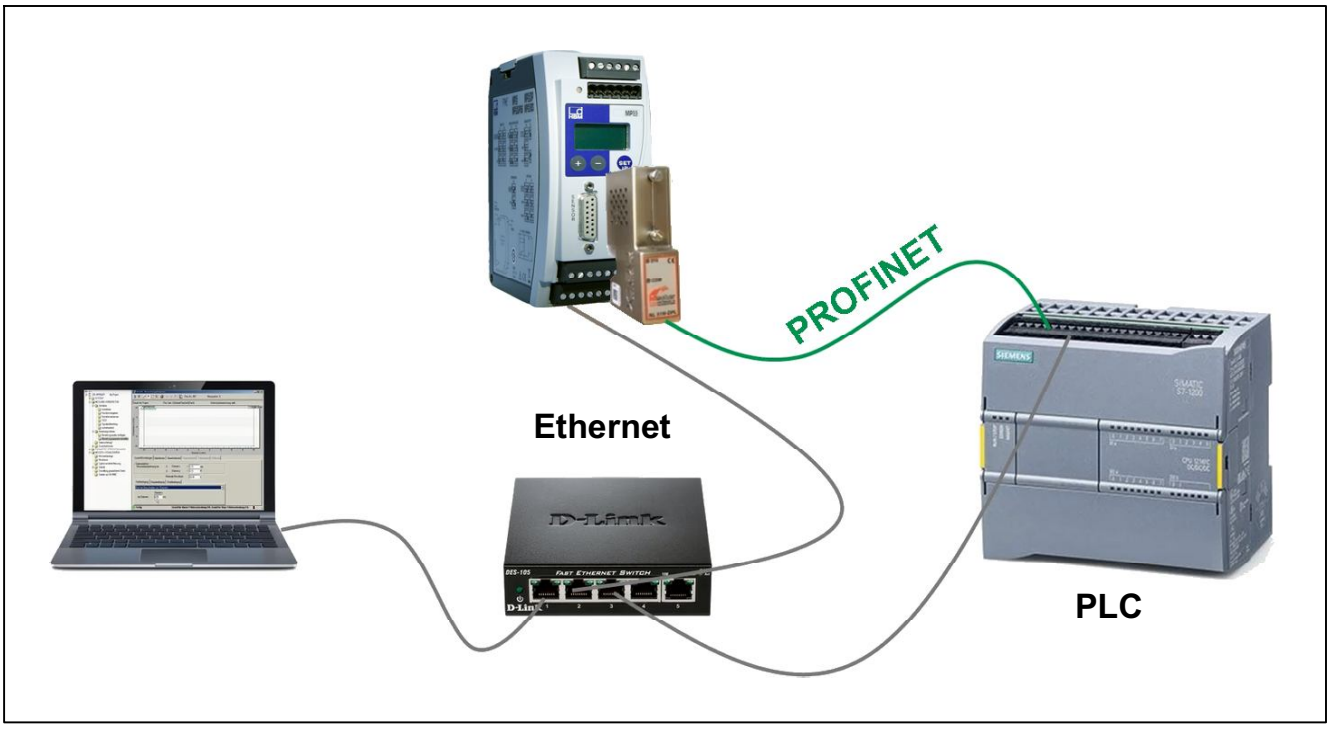


Fig. 4.1 Layout of the example shown

- ► Plug the adapter into the MP85ADP and connect the modules as illustrated above.
- ► Download the required files from the HBM website: www.hbm.com → Services & Support → Downloads → Firmware & Software → MP85A FASTpress. Download the archive file (ZIP format) from the section “PME MP85ADP(-S) Profinet Integration”.
- ► Unzip the file “GatewayDemo.zip” into a directory of your choice.

► Double-click on the “SYCONnet netX.exe” file in the “Hilscher Software” program directory to install the “Ethernet Device Setup” and “SYCON.net” programs. To do this, follow the instructions in the installation program.

Set the Ethernet address of the adapter (gateway) using the “Ethernet Device Setup” program. Use the “SYCON.net” program to generate the GSDML file for the PLC.

4.2 Configuration of the gateway’s IP address

► Launch the “Ethernet Device Setup” program. After installation, it is located in the “SYCON.net System Configurator” group of programs.

► Search for all devices with ***Search devices*** (*Fig. 4.2*).

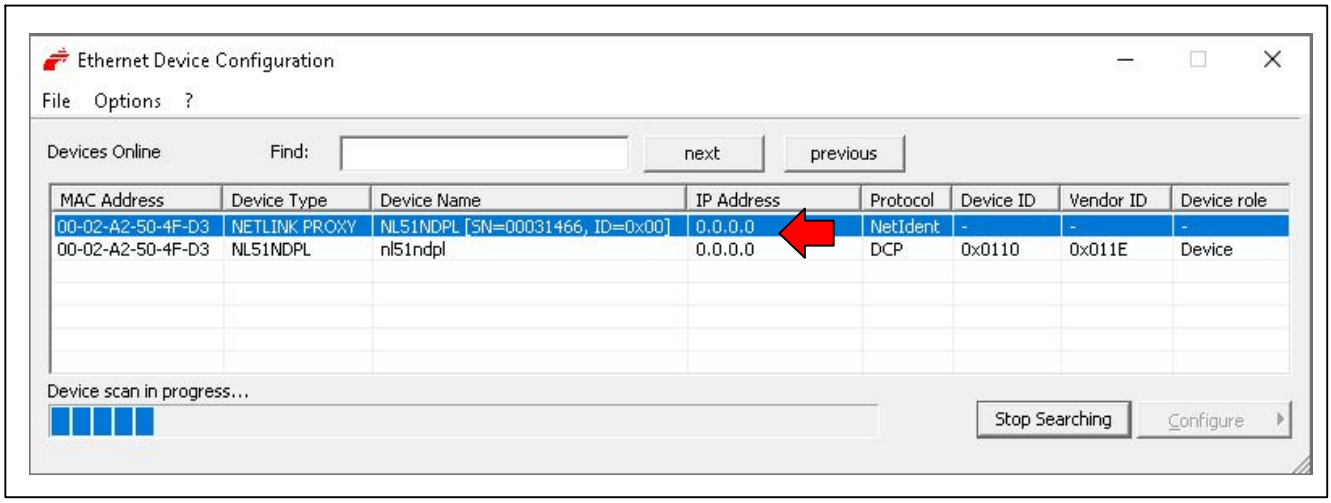


Fig. 4.2 Search devices

► Set the two cells with the (invalid) IP address 0.0.0.0 to the IP address in the address area of the PC or PLC on which the MP85A is to be operated. Use the context menu, for example, to open the setting dialog (*Fig. 4.3*).

► Also set the subnet mask. If you are unsure, ask your network administrator which values you should enter.

► If necessary, disable the option ***Store settings temporary*** (*Fig. 4.3*).

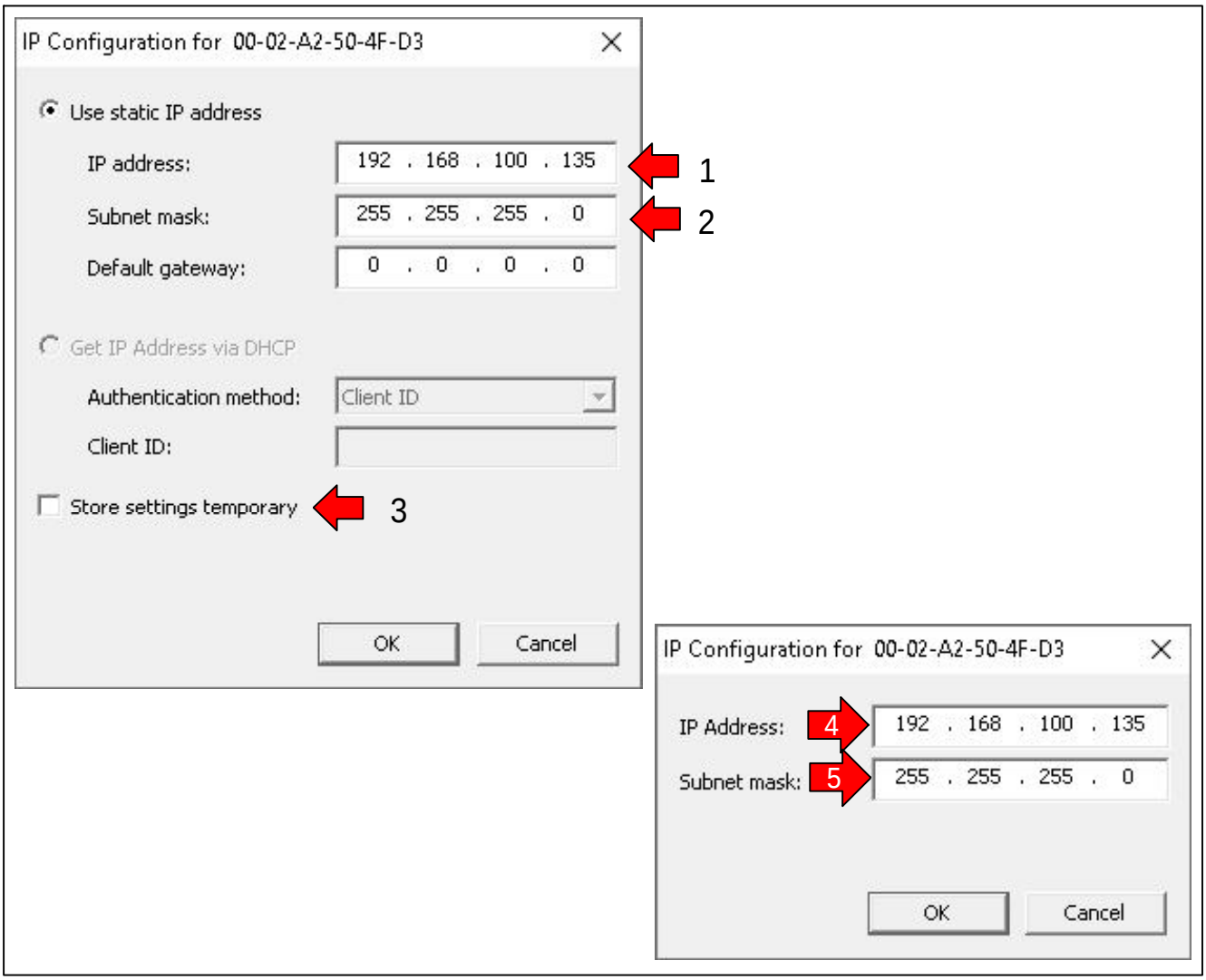


Fig. 4.3 Setting the IP address and subnet mask

► Close the dialogs with ***OK***.

► Exit the program.

4.3 Creating a GSDML file for PROFINET

For the steps below, the “GatewayData” folder must be unzipped and the gateway must have an Ethernet address, see *Sections 4.1 and 4.2*.

- ► Launch the “SYCON.net” program in the “SYCON.net System Configurator” group of programs.
- ► Search for ***NL 51*** in the right-hand window (Fig. 4.4).
- ► Drag the gateway onto the gray line (Ethernet) in the middle window (Fig. 4.4).

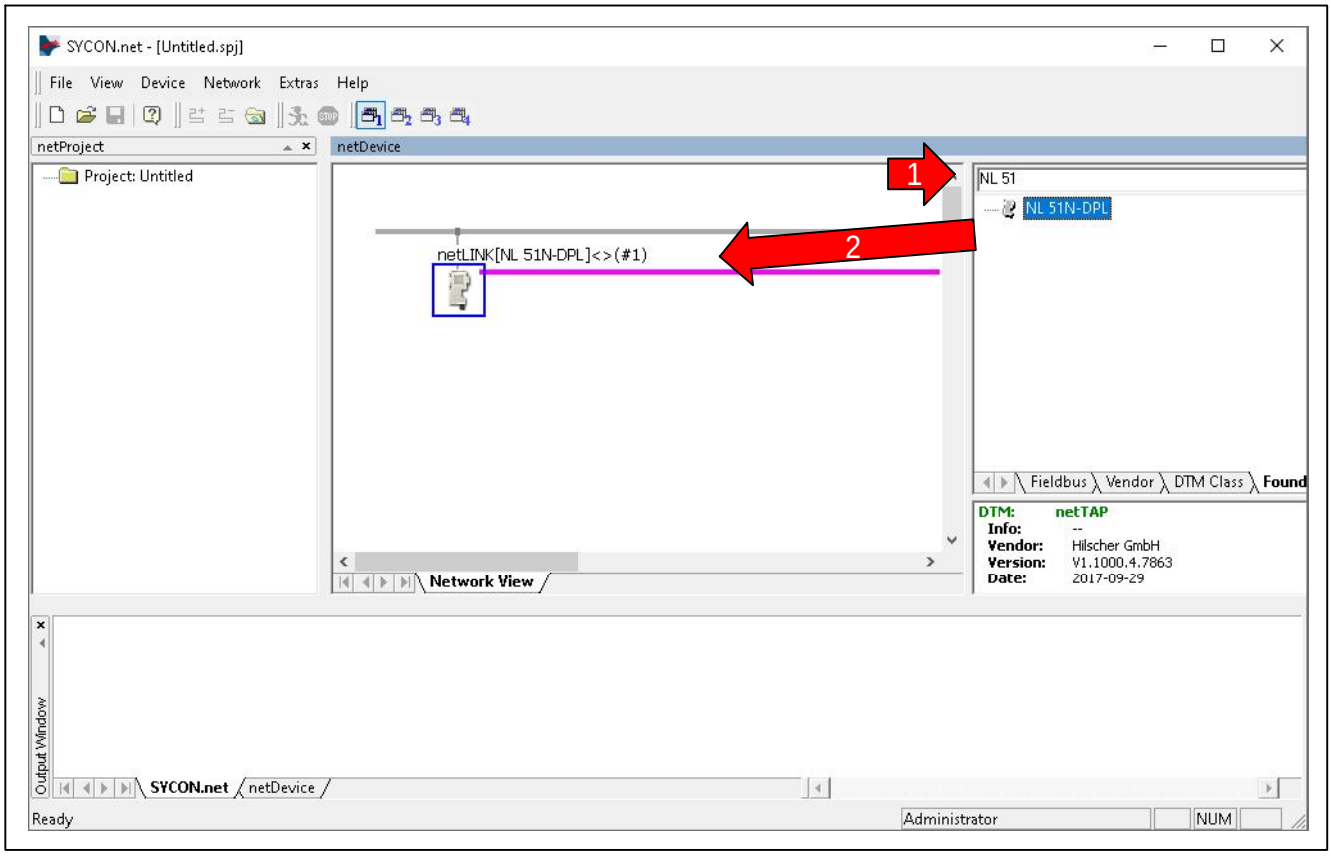


Fig. 4.4 Generating a gateway in the project

- ► Select **Network → Import Device Descriptions**.
- ► Open the GSE file for the MP85A in the subdirectory “MP85_GSE_GSD” (Hbm_0699.gse).

► Search for ***MP85*** in the right-hand window (*Fig. 4.5*).

► Drag the MP85A onto the purple line (PROFIBUS) in the middle window (*Fig. 4.5*).

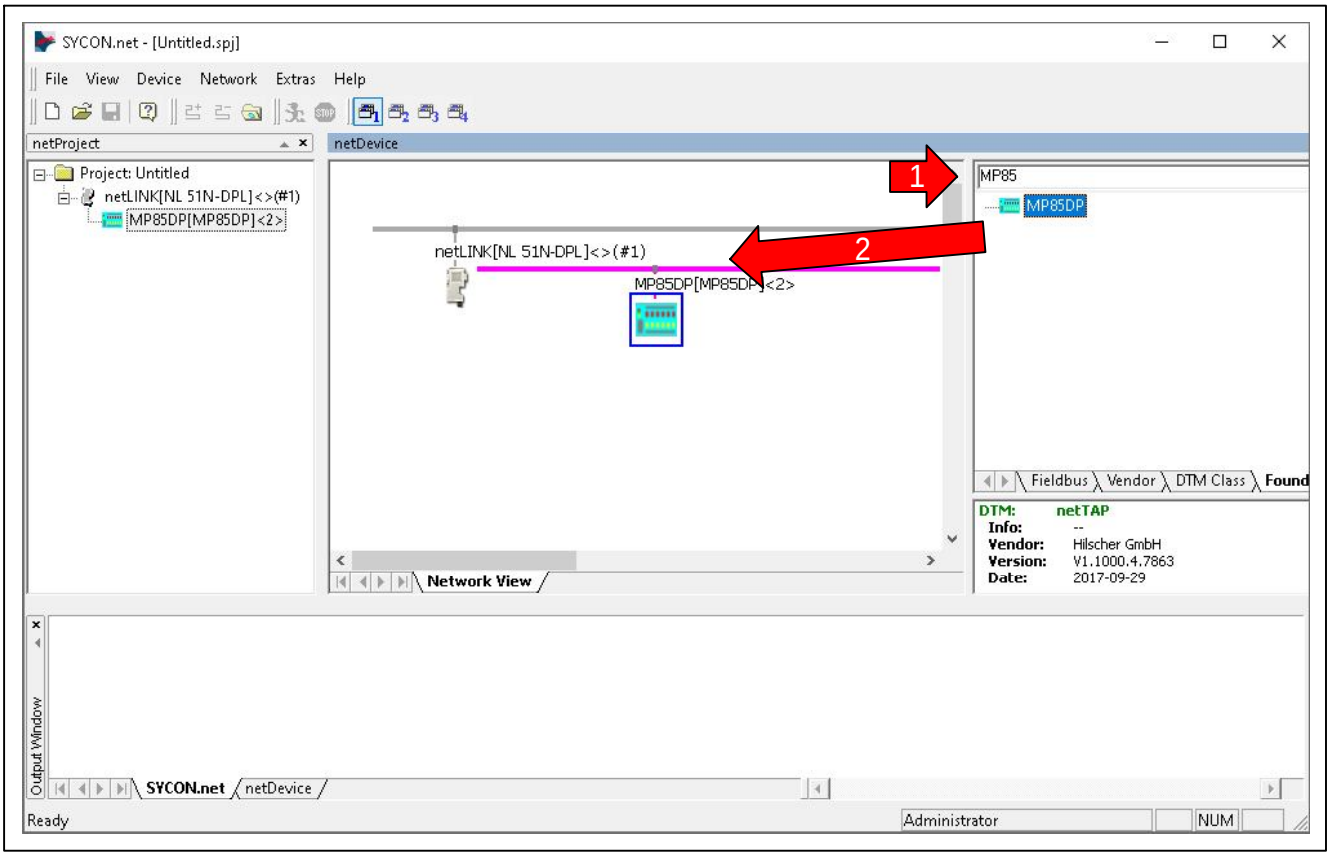


Fig. 4.5 Generating MP85 in the project

► Double-click on the gateway icon (*Fig. 4.6*).

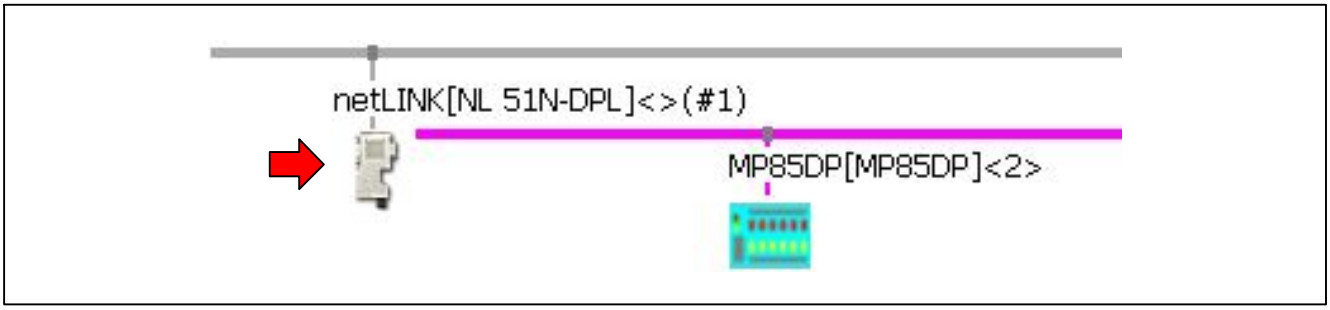


Fig. 4.6 Configuring the gateway

- ► In the dialog (*Fig. 4.7*), select ***netX Driver*** and the **TCP Connector** tab.
- ► Generate an IP area, e.g. ***IP_RANGE0*** by clicking on the plus sign (*Fig. 4.7*).
- ► Enter the IP address of the gateway. You can leave the other information on the default settings, or define values of your own.
- ► Click on ***Save***.

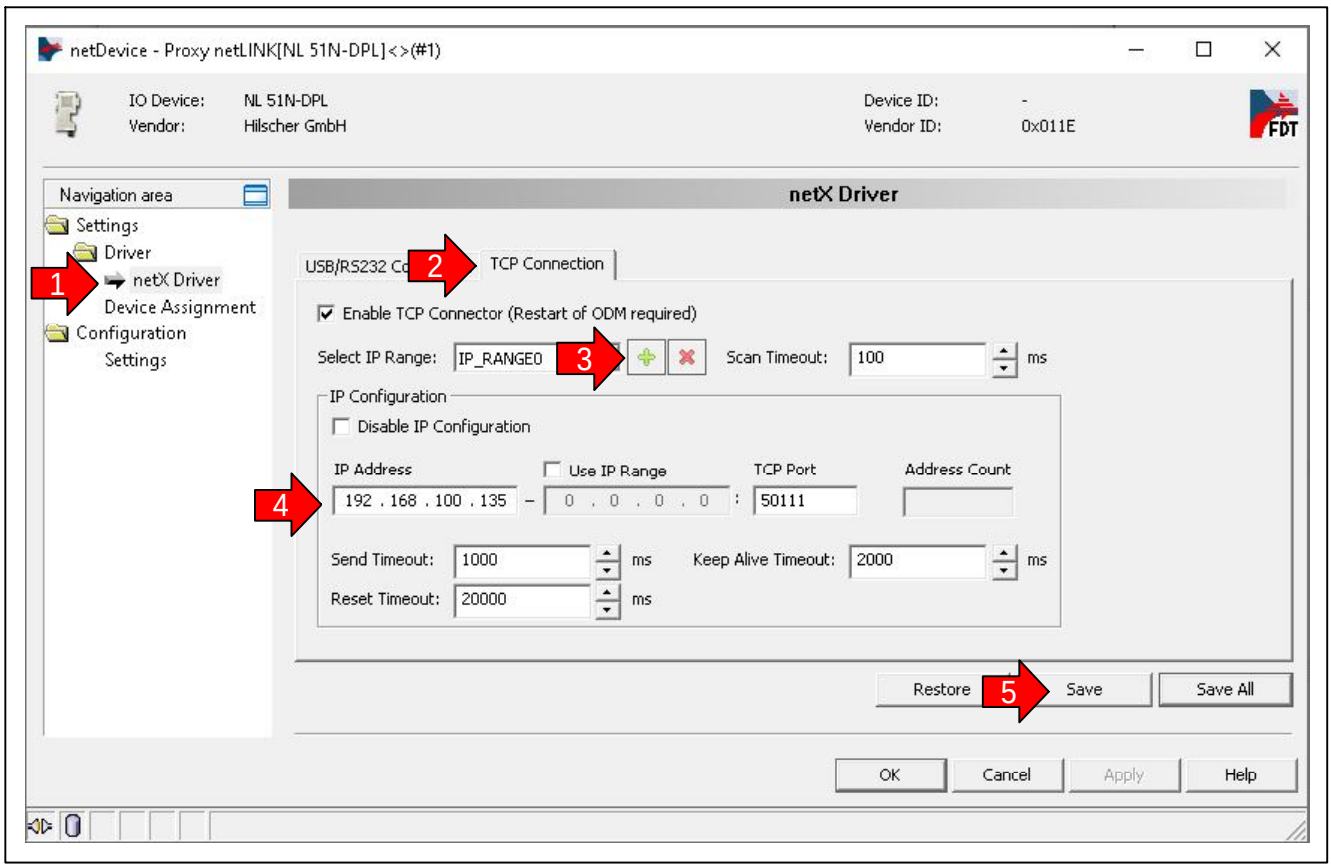


Fig. 4.7 Choosing a driver and entering the IP address

- ► In the dialog, select ***Device Assignment*** (*Fig. 4.8*).
- ► If your device is not yet displayed, click on ***Scan***.
- ► Enable your device by clicking on the first column (*Fig. 4.8*).
- ► Click on ***Apply*** and ***OK***.

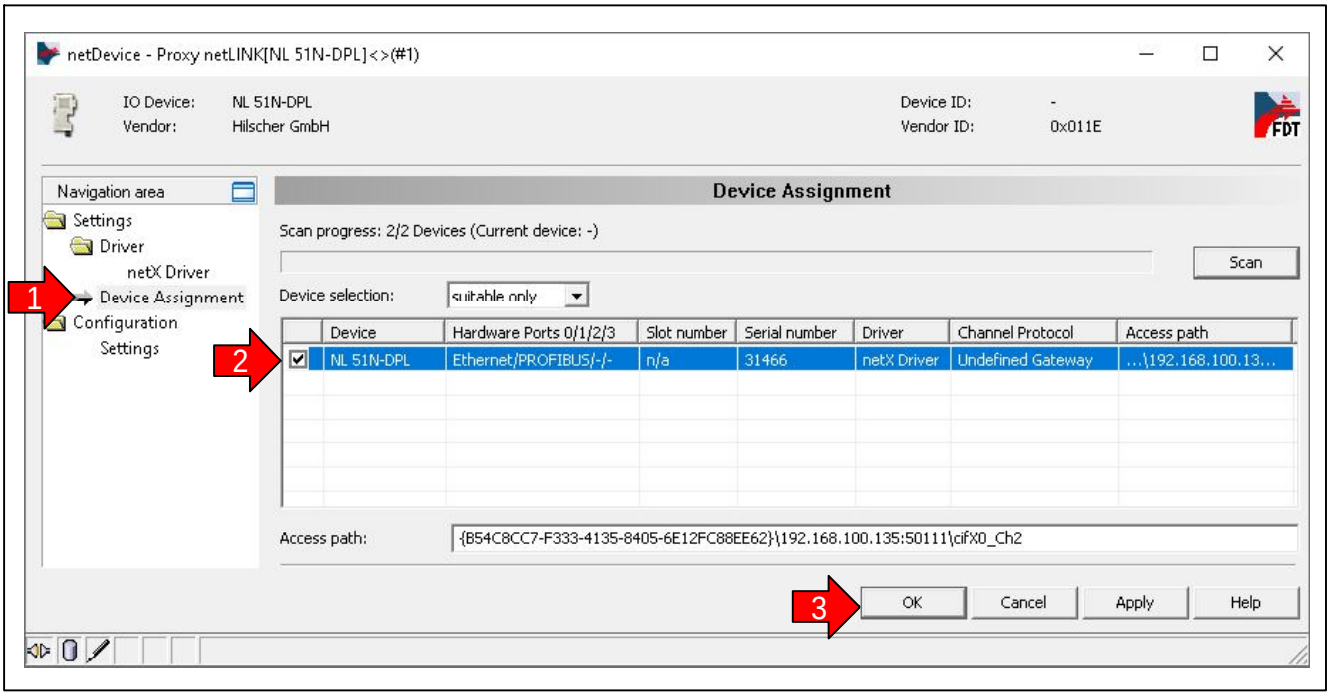


Fig. 4.8 Enabling a device

- ► Double-click on the MP85 icon (see also *Fig. 4.6*).
- ► Use the ***Insert*** and ***Append*** buttons to add the desired modules. In *Fig. 4.9*, the gross value and status of both channels are configured as an example.

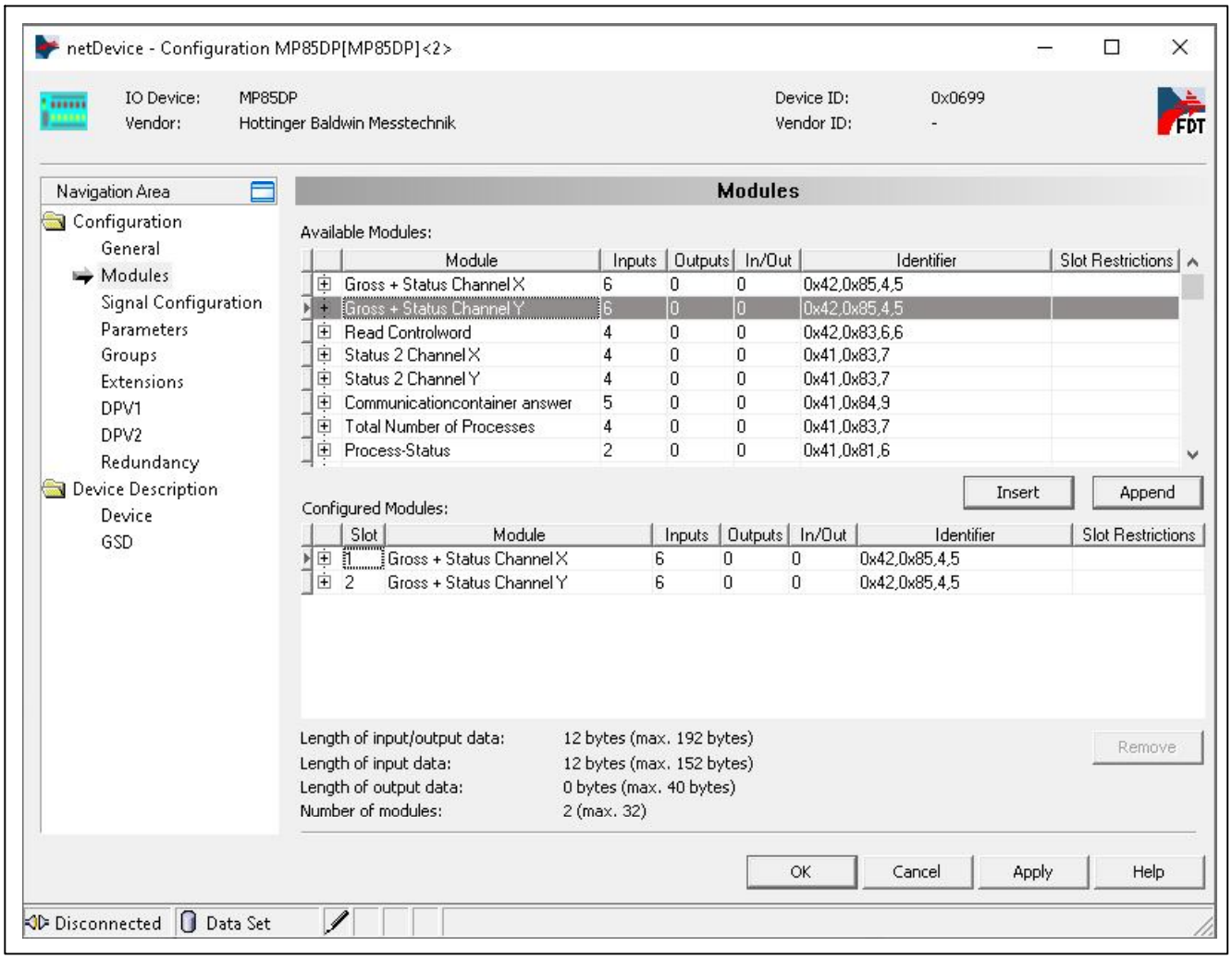


Fig. 4.9 Scanning for desired modules

► Finally, click on ***Apply*** and close the dialog with ***OK***.

► Select **Connect** in the gateway context menu (*Fig. 4.10*).

A successful connection is indicated by a green background behind the gateway name. If no connection is established, check the assigned IP addresses.

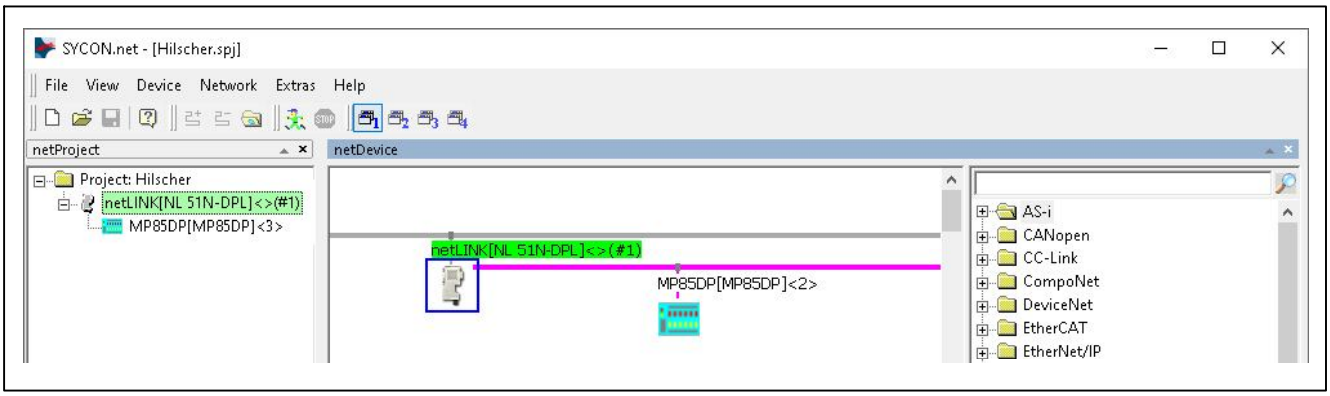


Fig. 4.10 The gateway is connected

► Select **Download** in the gateway context menu.

► Answer the confirmation prompt with ***Yes***.

Information

After the download, the gateway is reset and the Ethernet address is 0.0.0.0 once more.

► In the gateway context menu, select **Additional Functions → PROFINET IO Device → Export GSDML**.

► Save the file in a directory of your choice.

This file contains the functions of the MP85A, which you configured in *Fig. 4.9*. The file is required for the PLC, e.g. in the TIA portal.

► Select **Disconnect** in the gateway context menu.

► Exit the program.

4.4 Communication via the TIA portal (example)

For the steps below, the “GatewayData” folder must be unzipped and the GSDML file must have been generated, see *Sections 4.1 to 4.3*.

► Launch the TIA portal and create a new project.

► Change to **Project view**.

► Double-click on **Add new device***Fig. 4.11*.

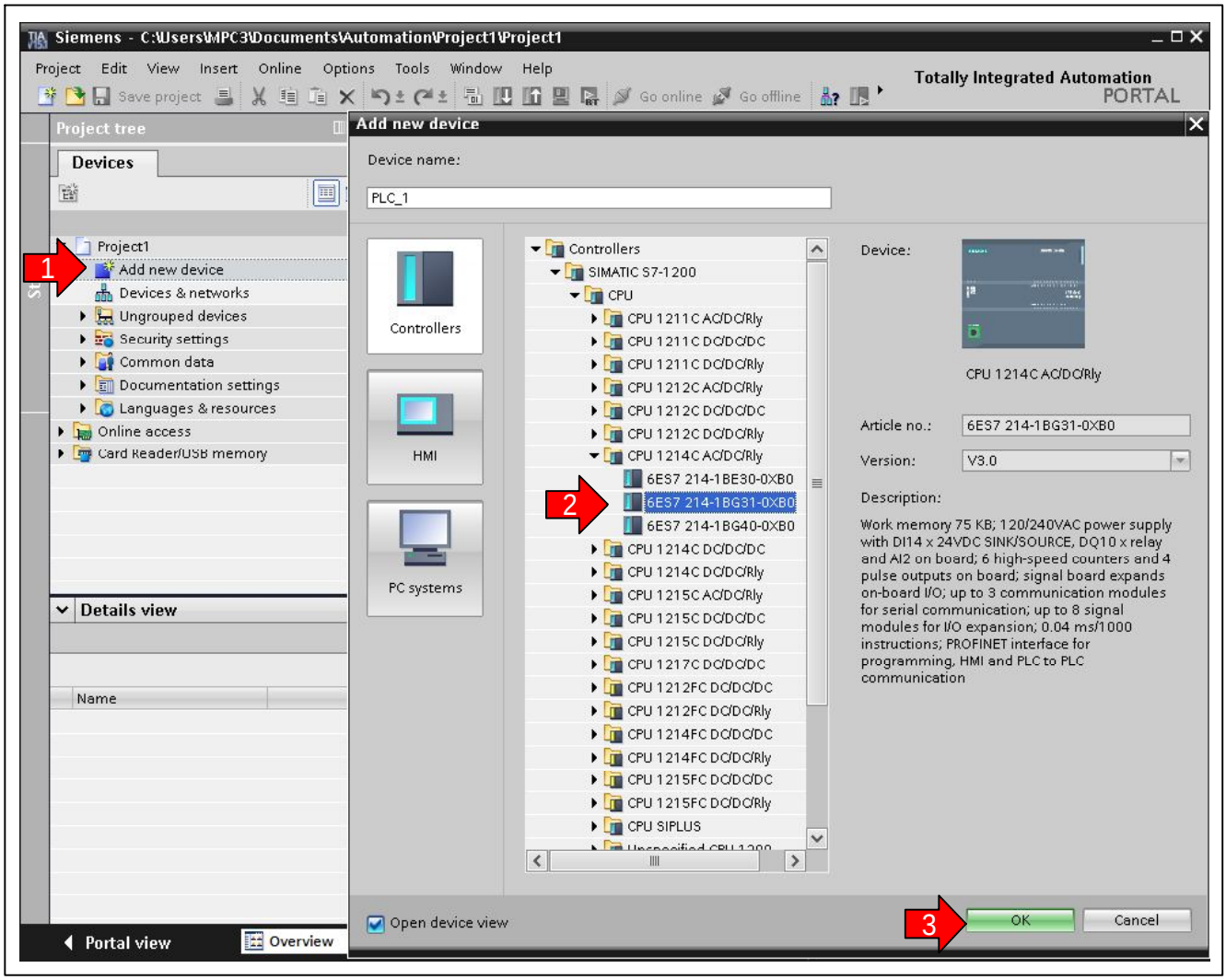


Fig. 4.11 Adding a PLC

► Highlight the PLC you are using.

► To add the PLC, close the dialog with ***OK***.

► Select the menu **Options → Manage general station description files (GSD)**.

► Open the GSDML file that you generated in *Section 4.3* and install the file (*Fig. 4.12)*.

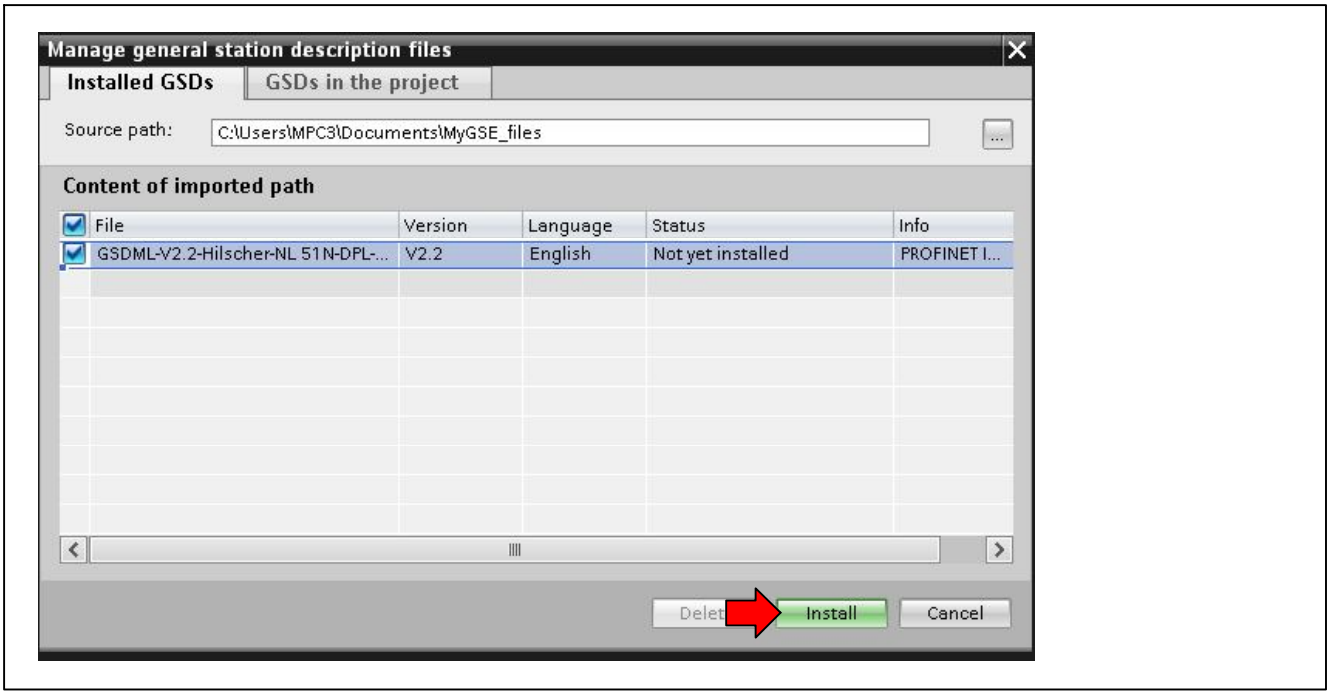


Fig. 4.12 Installing the GSDML file

► In the project, double-click on **Devices & networks** to view the **Hardware catalog** on the right, see also *Fig. 4.11*.

► Search for the gateway in the **Hardware catalog**, e.g. by searching for **Hilscher**.

► Now add the **NL 51N-DPL** gateway to the project (*Fig. 4.13*, right arrow).

► Connect the green squares of the PLC and gateway (*Fig. 4.13*, left arrow).

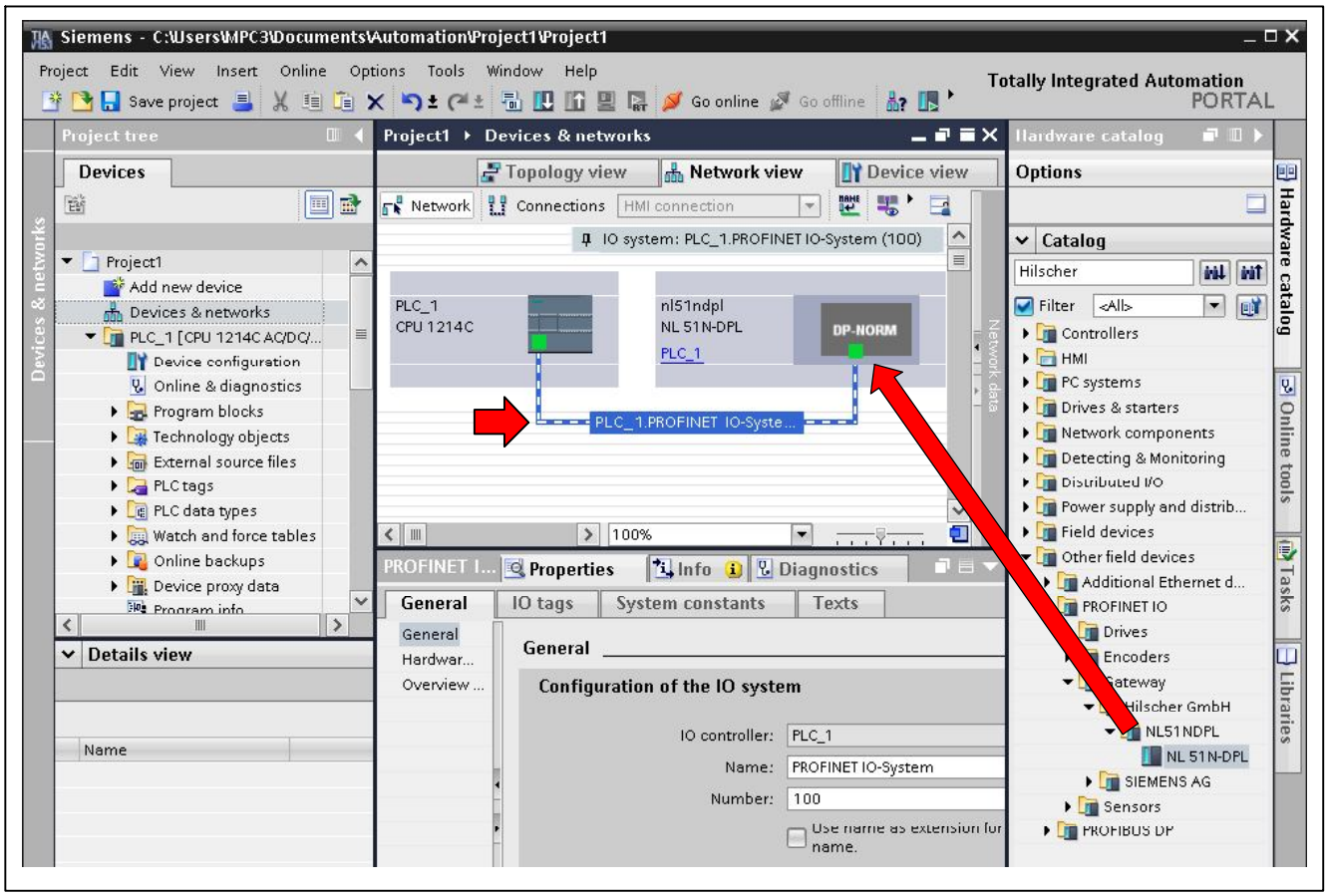


Fig. 4.13 Creating the gateway device and connecting it to the PLC

- ► In the left-hand project window, click on **Device configuration** for your PLC, see *Fig. 4.14*.
- ► Enable the **Properties** and **General** tabs and open the **PROFINET addresses** group, see *Fig. 4.14*.
- ► Click on **Ethernet addresses**.
- ► Enter the Ethernet address and subnet mask of the PLC (*Fig. 4.14*).

  The gateway address is generally assigned by the PLC. You may set the address yourself, however. In the TIA portal, use the group **Ungrouped devices → nl51ndpl → Device configuration**.
- ► Select the PLC, e.g. in the **Device view** or **Network view**.

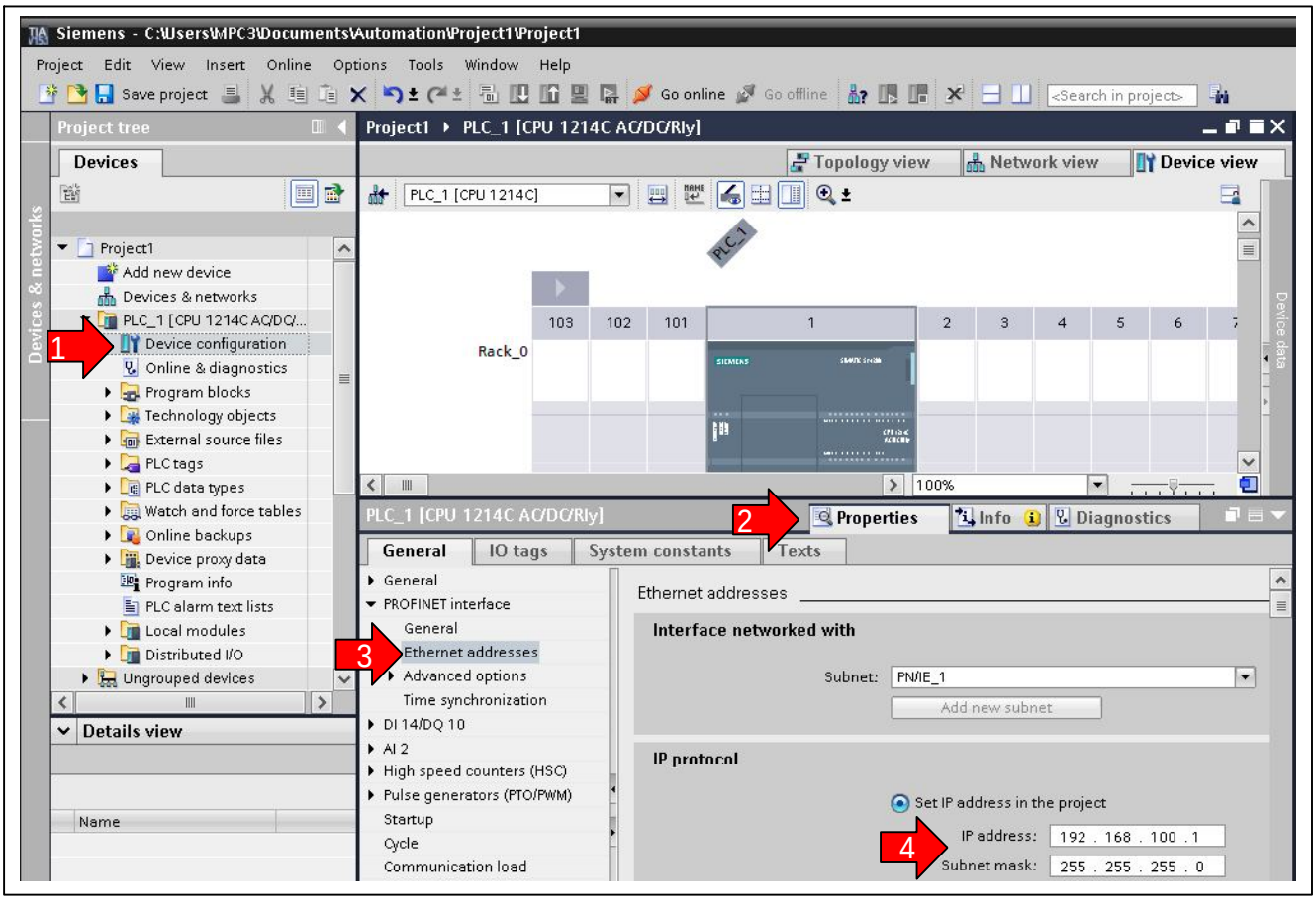


Fig. 4.14 Setting the Ethernet address of the PLC

► Click on the download icon , see *Fig. 4.15*.

► Click on ***Go online***.

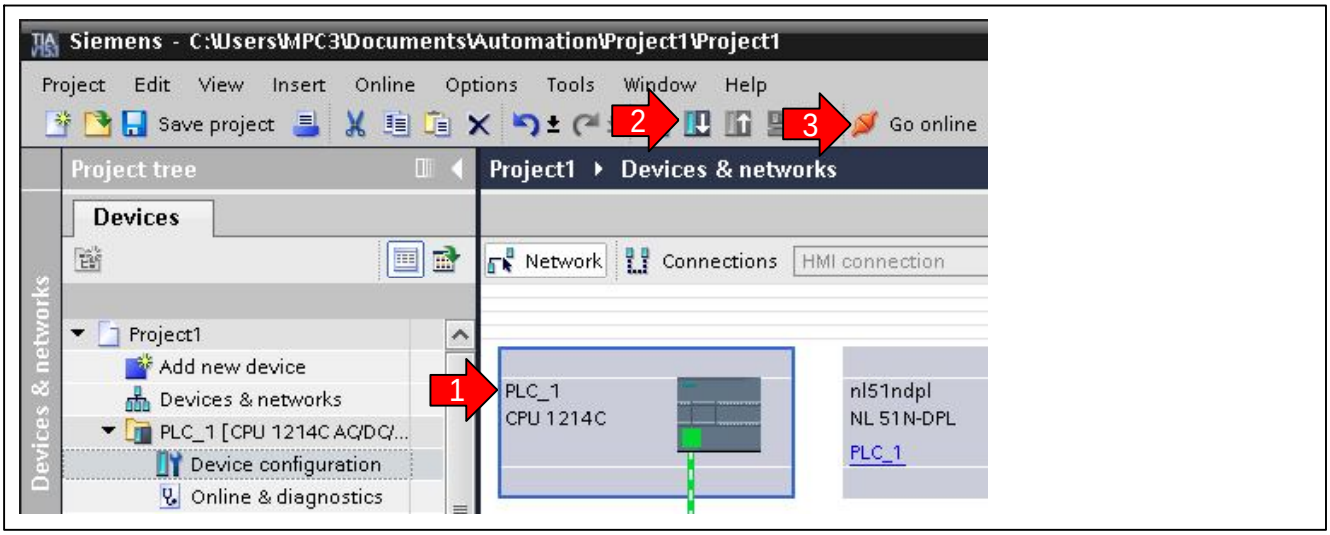


Fig. 4.15 Enabling the connection between the PLC and MP85A

Changing the workpiece name

HBM has created appropriate function blocks that enable you to change the workpiece name: WorkID_read and WorkID_write. To use these function blocks, you must incorporate the WorkID_Tags.xlsx and WorkID.scl files in your project.

► In the project, under your PLC (PLC_1 or name), click on **PLC tags** → **Show all tags** (*Fig. 4.16*).

► Using the  (Import) icon, select the “WorkID_Tags.xlsx” file in the “GatewayData\TIA” directory (*Fig. 4.16*).

► From this file, import the ***Tags*** elements (*Fig. 4.16*).

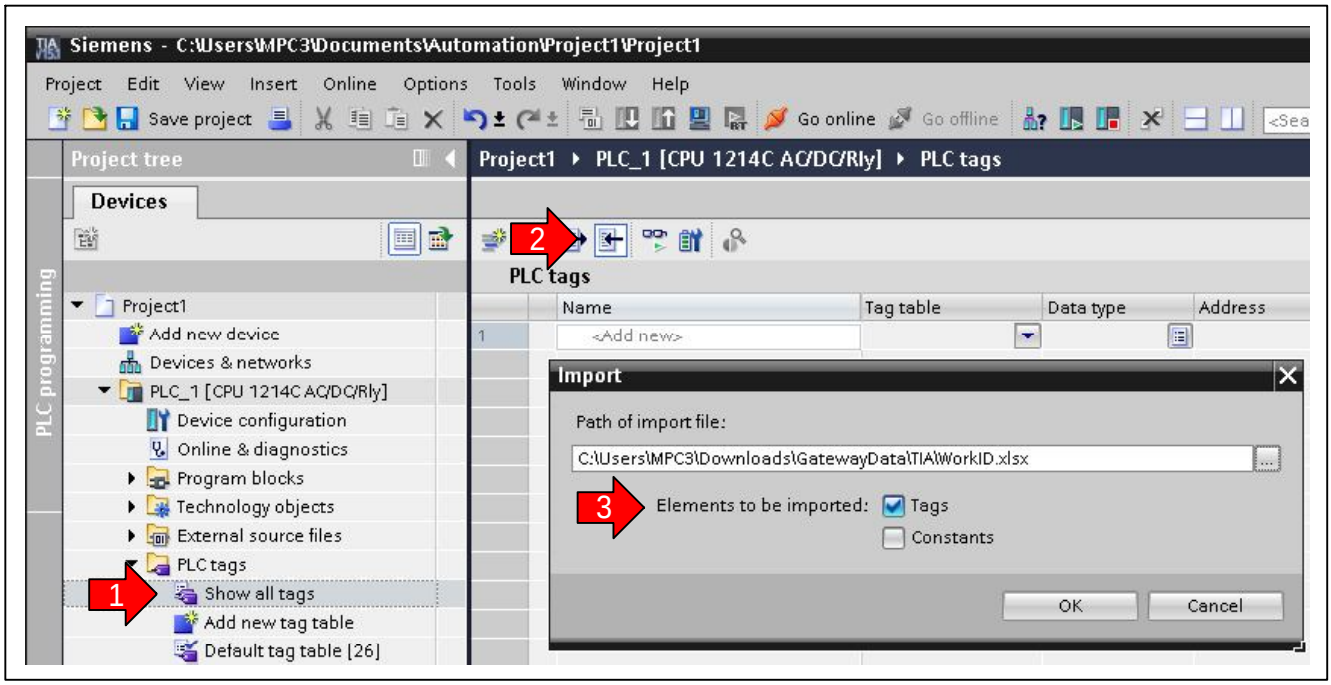


Fig. 4.16 Importing WorkID.xlsx

► In the project, under your PLC, open **PLC_x** → **External Source files** (*Fig. 4.17*, left-hand screenshot).

► Double-click on **Add new external file** (*Fig. 4.17*, left-hand screenshot).

► Open the “WorkID.scl” file in the “GatewayData\TIA” directory.

Once opened, the file is shown as an entry (*Fig. 4.17*, right-hand screenshot).

► In the context menu of the “WorkID.scl” entry, open **Generate blocks from source** in (*Fig. 4.17* right-hand screenshot).

The WorkID_read and WorkID_write function blocks and WorkID_read_DB and WorkID_write_DB data blocks are now generated.

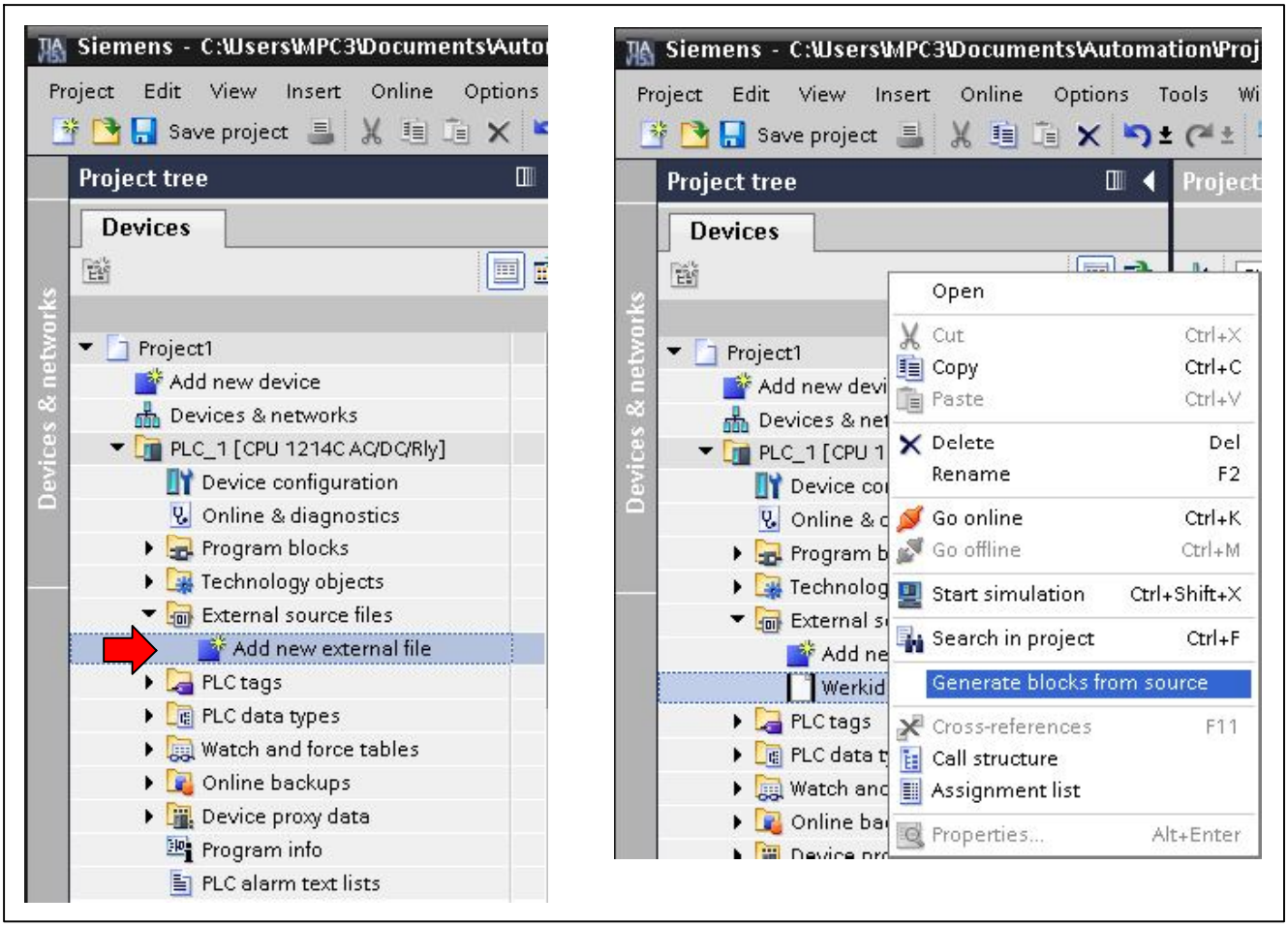


Fig. 4.17 Adding the Werkid.scl file and generating function blocks

The default setting of the workpiece name is “NewID”. You can change this name in the “Main” program block in the sWorkID variable (row 11, Fig. 4.18).

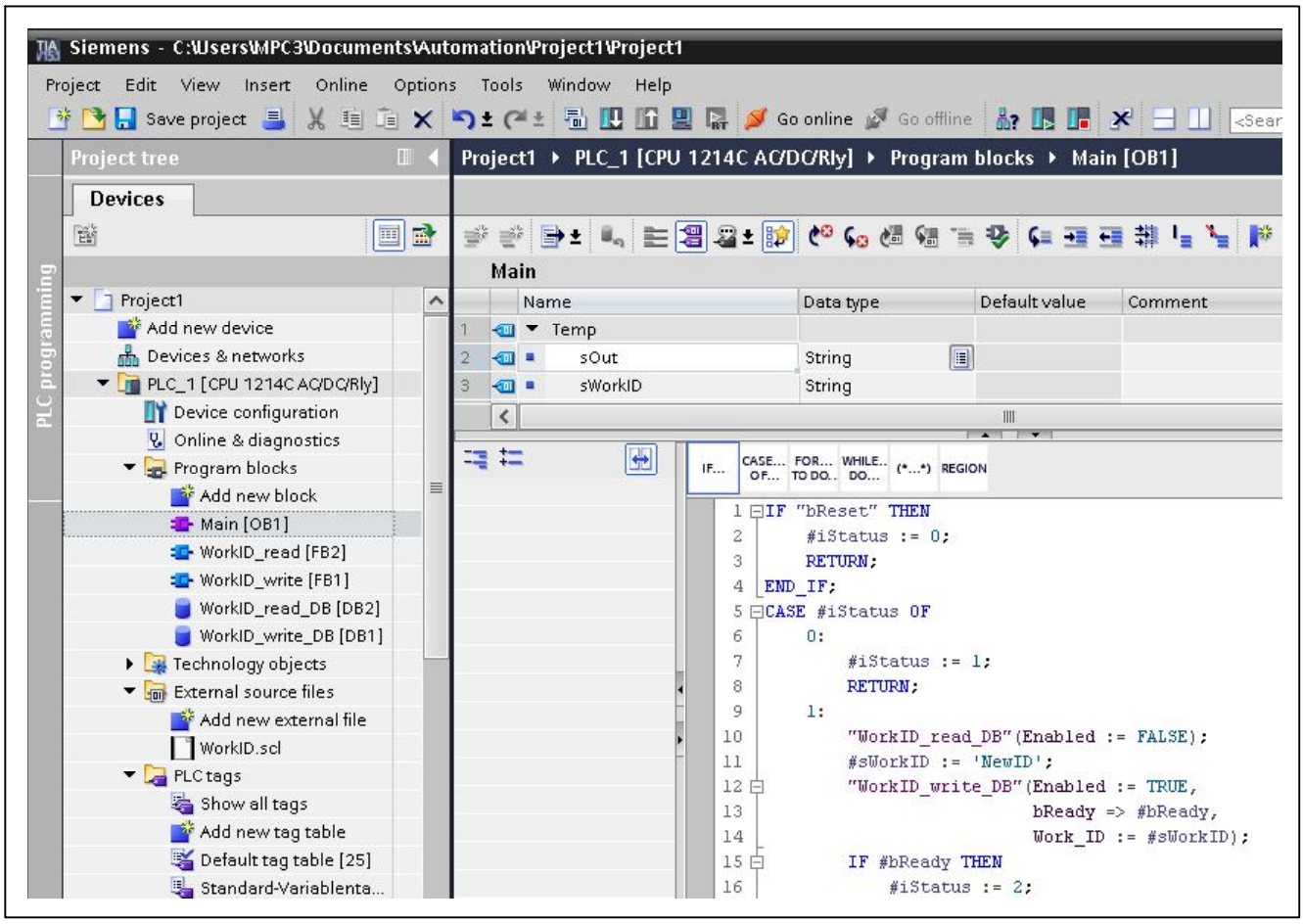


Fig. 4.18

► Go to the **Force table** (*Fig. 4.19*) to transmit the new name to the MP85A.

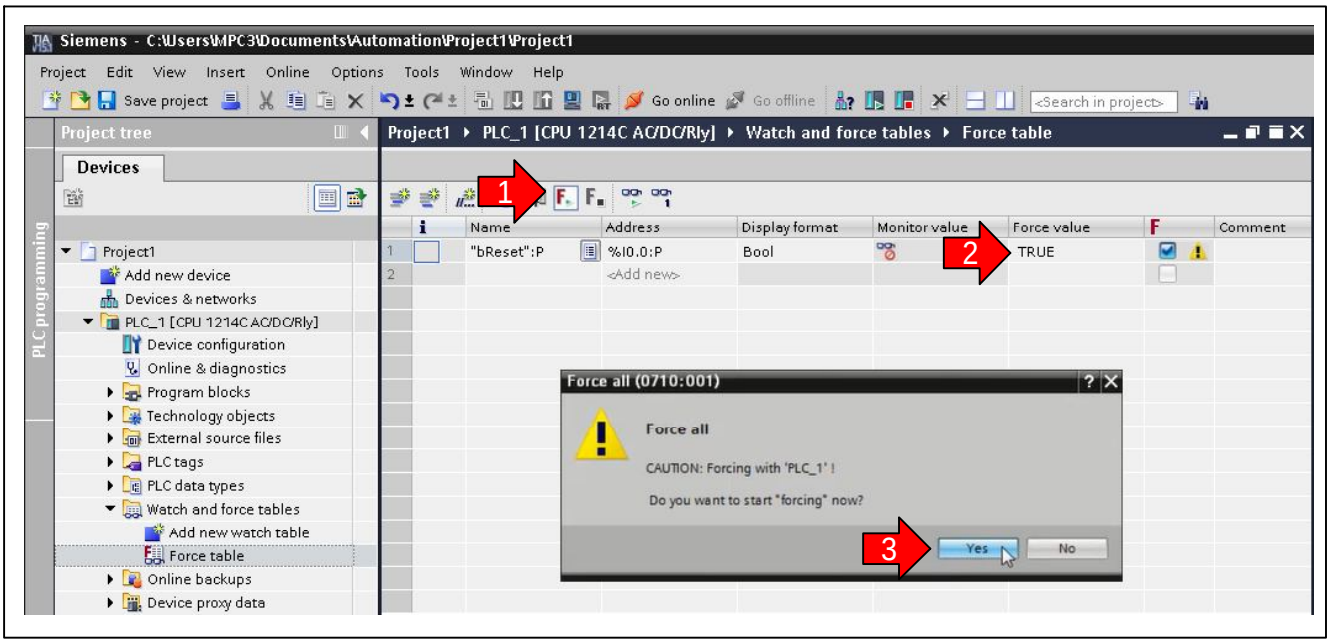


Fig. 4.19 Writing the workpiece name

► In the **Force value** column, change the value to ***TRUE*** and answer Yes to the confirmation prompt (*Fig. 4.19*).

The new workpiece name has now been written into the MP85A.